



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2019-0759; Product Identifier 2018-SW-075-AD]**

**RIN 2120-AA64**

**Airworthiness Directives; Various Experimental and Restricted Category**

**Helicopters**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The FAA proposes to adopt a new airworthiness directive (AD) for various helicopters operating under experimental airworthiness certificates and various type certificated restricted category helicopters. This proposed AD was prompted by multiple accidents and incidents involving failure of the tail boom attachment structure and bolts. This proposed AD would require revising the Rotorcraft Flight Manual (RFM) for your helicopter to incorporate pre-flight checks; removing paint and sealant, and cleaning; repetitive inspections of structural components that attach the tail boom to the fuselage; and depending on the outcome of the inspections, repairing or replacing components, or re-bonding the structure. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For AST, Inc. service information identified in this NPRM, contact: AST, Inc., 34976 Kamph Drive NE, Albany, OR 97322.

For JJASPP Engineering Services, LLC service information identified in this NPRM, contact: JJASPP Engineering Services, LLC, 511 Harmon Terrace, Arlington, TX 76010; phone: (817) 465-4495; website: [www.jjaspp.com](http://www.jjaspp.com).

For Northwest Rotorcraft, LLC service information identified in this NPRM, contact: Northwest Rotorcraft, LLC, 100085th Ave. S.E., Olympia, WA 98501; phone: (360) 754-7200; website: [www.nwhelicopters.com](http://www.nwhelicopters.com).

For Richards Heavylift Helo, Inc., service information identified in this NPRM, contact: Richards Heavylift Helo, Inc., 1181 Osprey Nest Point, Orange Park, FL 32073.

For Robinson Air Crane, Inc., service information identified in this NPRM, contact: Robinson Air Crane, Inc., 230 Bermuda Beach Drive, Ft Pierce, FL 34949; phone: (305) 302-9696.

For Rotorcraft Development Corporation service information identified in this NPRM, contact: Rotorcraft Development Corporation, P.O. Box 430, Corvallis, MT 59828; phone: (207) 329-2518; email: [administration@rotorcraftdevelopment.com](mailto:administration@rotorcraftdevelopment.com).

For San Joaquin Helicopters service information identified in this NPRM, contact: San Joaquin Helicopters, 1407 South Lexington Street, Delano, CA 93215; phone: (661) 725-1898; website: [www.sjhelicopters.com](http://www.sjhelicopters.com).

For Southwest Florida Aviation International, Inc. service information identified in this NPRM, contact: Southwest Florida Aviation International, Inc., 28000-A9 Airport Road, Bldg. 101, Punta Gorda, FL 33982-9587.

For Tamarack Helicopters Inc. service information identified in this NPRM, contact: Tamarack Helicopters Inc, 2849 McIntyre Rd, Stevensville, MT 59870; phone: (406) 777-0144; website: [www.tamarackhelicopters.com](http://www.tamarackhelicopters.com).

You may view this service information at the FAA, Office of the Regional Counsel, Southwest Region, 10101 Hillwood Pkwy, Room 6N-321, Fort Worth, TX 76177. For information on the availability of this material at the FAA, call (817) 222-5110.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2019-0759; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

The AD docket contains this NPRM, the special airworthiness information bulletins (SAIBs), the supplemental type certificate, the regulatory evaluation, any comments received, and other information. The street address for the Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Richard R. Thomas, Aerospace Engineer, Denver ACO Branch, Compliance & Airworthiness Division, FAA, 26805 East 68th Ave., Room 214, Denver, CO 80249; phone: (303) 342-1085; fax: (303) 342-1088; email: richard.r.thomas@faa.gov.

**SUPPLEMENTARY INFORMATION:**

**Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2019-0759; Product Identifier 2018-SW-075-AD” at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. The FAA will consider all comments received by the closing date and may amend this NPRM because of those comments.

The FAA will post all comments received, without change, to <http://www.regulations.gov>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this NPRM.

## Discussion

The FAA proposes to adopt a new AD for Model EH-1H, EH-1X, HH-1H, HH-1N, UH-1D, UH-1M, UH-1N, and UH-1V helicopters operating under experimental airworthiness certificates; and for restricted category type certificated Model HH-1K, TH-1F, TH-1L, UH-1A, UH-1B without STC No. SR00026DE installed, UH-1E, UH-1F, UH-1H, UH-1L, and UH-1P helicopters. The FAA plans to publish separate rulemaking to address Model UH-1B with STC No. SR00026DE installed.

The type certificate holders for the restricted category models are Arrow Falcon Exporters Inc.; AST, Inc.; Bell Helicopter Textron, Inc.; California Department of Forestry; West Coast Fabrications; Global Helicopter Technology, Inc.; Hagglund Helicopters, LLC; International Helicopters, Inc.; JJASPP Engineering Services, LLC; JTBAM, Inc.; Northwest Rotorcraft, LLC; Red Tail Flying Services, LLC; Richards Heavylift Helo, Inc.; Robinson Air Crane, Inc.; Rotorcraft Development Corporation; San Joaquin Helicopters; Smith Helicopters; Southwest Florida Aviation International, Inc.; and Tamarack Helicopters, Inc.

This proposed AD would require revising the RFM for your helicopter to incorporate pre-flight checks; removing paint and sealant, and cleaning structural components that attach the tail boom to the fuselage; repetitive inspections of the cleaned structural components; repairing scratches, nicks, gouges, tears, and corrosion within allowable limits; replacing structural components with non-repairable damage, cracks, buckling, or distortion; replacing loose or missing rivets; re-bonding structures with dis-bonds; and removing loose bolts and self-locking nuts from service and replacing them with new bolts and new self-locking nuts.

This proposed AD was prompted by a series of accidents and incidents involving failure of the tail boom attachment structure on several restricted category military surplus helicopters. This condition, if not addressed, could result in separation of the tail boom from the helicopter, and subsequent loss of control of the helicopter.

In January 1982, a tail boom separated from a UH-1B helicopter engaged in logging operations, resulting in a fatal accident. The National Transportation Safety Board's (NTSB) final report identified structural fatigue and inadequate maintenance as probable causes. In September 2013, a tail boom separated from another UH-1B helicopter engaged in logging operations, resulting in another fatal accident. The NTSB's final report for that accident identified the cause as fatigue failure of the upper two tail boom attach points. Contributing to this accident was poor maintenance throughout the helicopter's operational life. In addition to these accidents, the FAA is aware of three forced landings due to tail boom attachment structure failures, one in May 2014 on a UH-1H helicopter, one in August 2016 on a UH-1H helicopter, and one in August 2018 on a UH-1F helicopter. The helicopter involved in the May 2014 forced landing was engaged in construction operations. The operations the helicopter was engaged in during the August 2016 forced landing are unknown. The helicopter involved in the August 2018 forced landing was engaged in firefighting operations.

In the first fatal accident and two of the forced landings, a loud pop or bang was heard in the rear of the aircraft at the moment of failure. In the second fatal accident, the pilot indicated before the flight that the helicopter felt like it "shuffled" during translational lift. Four of the five incidents involved a failure of the upper left hand tail boom attachment structure. In three cases it was the attach fitting on the tail boom side. In

one case it was the longeron on the tail boom side. The upper left hand tail boom attach point is the most heavily loaded of the four attach points.

The FAA issued Special Airworthiness Information Bulletin SW-18-29 (SAIB SW-18-29) on October 1, 2018 to alert owners and operators of Restricted Category Bell Model HH-1K, UH-1A, UH-1B, UH-1E, UH-1F, UH-1H, UH-1L, UH-1P, TH-1F, and TH-1L helicopters of failure of the tail boom attachment structure.

SAIB SW-18-29 recommends adhering to the helicopter's Instructions for Continued Airworthiness which includes a repetitive 100 hour time-in-service (TIS) inspection of the tail boom attachment structure on both sides of the four attachment points. SAIB SW-18-29 also specifies the following supplemental recommendations: keeping the fittings on both sides of all four attachment points, the cap angles running forward from the fuselage side fitting, and the longerons running aft from the tail boom side fitting, clean and free of paint and any non-faying sealant; and inspecting for cracks in the attachment structure with a borescope since the tail boom side structure is difficult to access. On the fuselage side, SAIB SW-18-29 recommends paying particular attention to the most forward fitting fasteners, the cap angle and the cap angle rivets just forward of the fitting as failures in these areas are more common. On the tail boom side, SAIB SW-18-29 recommends paying particular attention to the most aft fitting fasteners as failures in this area are more common. SAIB SW-18-29 also advises that smoking rivets are an indicator of attachment point issues. For helicopters that perform heavy lift operations, SAIB SW-18-29 recommends performing a repetitive 20 hours TIS inspection of both the fuselage and tail boom upper left-hand (LH) attach fittings, fuselage side cap angle, and tail boom side longeron. Lastly, for all affected helicopters, if a loud noise (typically a "pop" or

“bang”) is heard in the rear of the aircraft during flight, SAIB SW-18-29 recommends minimizing hovering, slow flight, and pedal turns; reducing power when possible to avoid left pedal input; jettisoning external loads (if present) as soon as possible; and landing the aircraft as soon as possible. If an external load must be landed, SAIB SW-18-29 recommends performing a forward descent until the load touches down.

Based on input from a repair station, the FAA revised SAIB SW-18-29 to SAIB SW-18-29R1, dated February 19, 2019 (SAIB SW-18-29R1), to alert all owners and operators of clarified paint and sealant removal procedures and simplify the wording of recommendations to provide clarity. In particular, it was necessary to correct the emphasized inspection areas. The fuselage side fitting emphasis was revised to focus on the fitting section through the rivets closest to the attach bolt (the aft fitting fasteners) rather than through the most forward fitting fasteners. The tail boom side fitting emphasis was revised to focus on the fitting section through the rivets closest to the attach bolt (the forward fitting fasteners) rather than through the most aft fitting fasteners.

### **Related Service Information**

The FAA reviewed portions of the following related service information:

- Garlick Helicopters Inc. Instructions for Continued Airworthiness Report No. GH-H13WE-CA1H, UH-1H Helicopters, Revision 4, dated August 9, 2012, available from Rotorcraft Development Corporation. This report contains a Component Overhaul Schedule, an Airworthiness Limitation Schedule, and a Continued Airworthiness Documents Section that lists Army Technical Manuals required for servicing, maintaining, inspecting, repairing, and overhauling the helicopter, its engine, rotors, and appliances, and for special purpose modifications.



- Garlick Helicopters Inc. Instructions for Continued Airworthiness Report No. GH-H5NM-CA1, UH-1E, UH-1L, TH-1L and HH-1K Helicopters, Revision Original, dated October 22, 2002, available from Rotorcraft Development Corporation. This report contains a Component Overhaul Schedule, an Airworthiness Limitation Schedule, and a Continued Airworthiness Documents Section that lists Army Technical Manuals required for servicing, maintaining, inspecting, repairing, and overhauling the helicopter, its engine, rotors, appliances, and for special purpose modifications.

- Headquarters, Department of the Army, Aviation Unit and Intermediate Maintenance Instructions Model UH-1H/V/EH-1H/X Helicopters, Technical Manual TM 55-1520-210-23-1, Change 42, dated April 14, 2003, available from JJASPP Engineering Services, LLC, Richards Heavylift Helo, Inc., and San Joaquin Helicopters. This service information contains: tail boom hoisting/handling instructions; hard landing, tail rotor blade strike, and sudden stoppage due to compressor stall tail boom inspection requirements; tail boom removal and installation instructions including attachment bolt installation and tightening instructions, tail boom attachment fitting inspection instructions, tail boom and fuselage attachment fitting bolt hole wear limits, allowable tail boom attachment fitting damage and corrosion repair instructions; loose attachment fitting fastener inspection and replacement instructions; tail boom attachment fitting replacement instructions; classification of damage as negligible, repairable or requiring replacement for tail boom structure including rivets, fasteners, tail boom attachment fittings, stringers, and longerons; tail boom structural material specifications; allowable area for damage repair of tail boom attachment fittings; longeron damage limits and repair criteria; and stringer repair instructions.

- Headquarters, Department of the Army, Aviation Unit and Intermediate Maintenance Instructions Army Model UH-1H/V/EH-1H/X, Technical Manual TM 55-1520-210-23-3, Change 8, dated June 14, 1996, available from JJASPP Engineering Services, LLC, Richards Heavylift Helo, Inc., and San Joaquin Helicopters. This service information contains: a Maintenance Allocation Chart which assigns tail boom maintenance functions to three levels, (1) high-frequency field tasks requiring general knowledge to maintain the helicopter in an airworthy condition or return the helicopter to an airworthy condition, (2) low-frequency field tasks requiring specialized knowledge to return the helicopter to an airworthy condition, and (3) helicopter or component maintenance tasks which cannot be performed in the field; and instructions for field manufacture of part number (P/N) 204-030-800-443, Tail Boom Assembly Cover, and P/N 205-031-801-53, Tail Boom Cover.

- Headquarters, Department of the Army, Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual for General Aircraft Maintenance (General Maintenance and Practices), Volume 1, Technical Manual TM 1-1500-204-23-1, Change 5, dated May 31, 2006, available from Richards Heavylift Helo, Inc. This service information contains general maintenance practice information.

- Headquarters, Department of the Army, AVUM and AVIM Manual for General Aircraft Maintenance (Hardware and Consumable Materials) Volume 6, Technical Manual TM 1-1500-204-23-6, Change 4, dated August 20, 2004, available from Richards Heavylift Helo, Inc. This service information contains general information pertaining to the use and identification of hardware and materials, specifically bolts, nuts,

rivets, clamps, fittings, plate nuts, torque values, lockwire techniques, cotter pins, safety pins, and Hi-Shear rivets.

- Headquarters, Department of the Army, AVUM and AVIM Manual for General Aircraft Maintenance (Nondestructive Testing and Flaw Detection Procedures and Practices) Volume 7, Technical Manual TM 1-1500-204-23-7, Change 1, dated December 30, 1993, available from Richards Heavylift Helo, Inc. This service information contains general information pertaining to nondestructive testing and flaws, and nondestructive inspection procedures and practices, particularly magnetic particle inspections, radiography, ultrasonic inspections, and electromagnetic inspections.

- Headquarters, Department of the Army, AVUM and AVIM Manual for General Aircraft Maintenance (Sheet Metal Shop Practices) Volume 10, Technical Manual TM 1-1500-204-23-10, Change 3, dated August 20, 2004, available from Richards Heavylift Helo, Inc. This service information contains general information pertaining to the repair of aircraft structures, structural metals, forming of replacement structure, rivets and riveting techniques, airframe sheet metal repair, and sandwich construction repair.

- Headquarters, Department of the Army, AVUM and AVIM Manual Nondestructive Inspection Procedures for UH-1 Helicopter Series, Technical Manual TM 1-1520-256-23, dated November 30, 1996, available from Richards Heavylift Helo, Inc. This service information contains instructions for accomplishing an eddy current inspection of the fuselage structure, tail boom and fuselage tail boom attachment fittings, and tail boom longerons.

- Headquarters, Department of the Army, Operator's Manual Army Model UH-1B Helicopter, Technical Manual TM 55-1520-219-10, Change 20, dated May 16, 1983, available from Richards Heavylift Helo, Inc., and Rotorcraft Development Corporation. This manual contains operating instructions and procedures for the UH-1B helicopter. It includes a brief description of the tail boom structure.

- Headquarters, Department of the Army, Operator's Manual Army Model UH-1H/V Helicopters, Technical Manual TM 55-1520-210-10, Change 20, dated June 23, 2005, available from Northwest Rotorcraft, LLC, Richards Heavylift Helo, Inc., and Rotorcraft Development Corporation. This manual contains operating instructions and procedures for the UH-1H/V helicopter. It includes a brief description of the tail boom structure and a pre-flight check of the tail boom attachment bolts.

- Headquarters, Department of the Army, Organizational Maintenance Manual Army Model UH-1B Helicopter, Technical Manual TM 55-1520-219-20, Change 28, dated August 2, 1982, available from Richards Heavylift Helo, Inc., Rotorcraft Development Corporation, and Southwest Florida Aviation International, Inc. This manual provides various maintenance instructions for flight line maintenance crews, including special inspections of the tail boom attachment structure. Following hard landings, tail rotor blade strikes, or compressor stalls, maintenance crews are required to inspect the area where the tail boom attaches to the forward fuselage section, specifically the attachment fittings, longerons and cap angles, for cracks, distortion, and loose rivets, and the attachment bolts for torque.

- Headquarters, Department of the Army, Preparation for Shipment of UH-1/EH-1 Helicopters, Technical Manual TM 55-1520-242-S, Change 5, dated June 30,

1993, available from JJASPP Engineering Services, LLC. This service information contains instructions to coat attachment points and hardware with corrosion preventive when tail boom is removed for transport.

- Headquarters, Department of the Army, Rotorcraft Development Corporation, UH-1B Aircraft Preventive Maintenance Services, Technical Manual TM 55-1520-219-PMS, Change 7, dated August 9, 1976, available from Rotorcraft Development Corporation. This service information contains requirements: to inspect the tail boom attaching bolts for security and the fittings for cracks daily and every 25, 50, 75, and 100 flight hours; and to inspect the tail boom interior structure and longerons for damage, cracks, and corrosion every 100 flight hours.

- Headquarters, Department of the Army, UH-1B DS and GS Maintenance Manual, Technical Manual TM 55-1520-219-34, Change 9, dated June 5, 1972, available from Richards Heavylift Helo, Inc., Rotorcraft Development Corporation, and Southwest Florida Aviation International, Inc. This service information contains: instructions to remove and install the tail boom; attachment bolt exposed thread limits; attachment bolt tightening instructions with instructions for manufacturing a special torque wrench extension; allowable tail boom attachment fitting hole diameters; damage classifications for tail boom skin, stringers and longerons as negligible, repairable by patching, repairable by insertion, or damage necessitating replacement; and instructions for field manufacture of P/N 204-030-800-443, Tail Boom Assembly Cover.

- Headquarters, Department of the Army, UH-1H/V and EH-1H/X Aircraft Phased Maintenance Checklist, Technical Manual TM 55-1520-210-PM, Changes 22, dated May 8, 2002, available from Northwest Rotorcraft, LLC. This service information

contains phased inspection requirements for the tail boom interior and fuselage heater compartment to check for damage, cracks, and corrosion.

- Headquarters, Department of the Army, UH-1H/V and EH-1H/X Aircraft Preventative Maintenance Daily Inspection Checklist, Technical Manual TM 55-1520-210-PMD, Preventive Maintenance Daily Inspection Checklist UH-1H/V and EH-1H/X Helicopters, Change 11, dated April 11, 2003, available from JJASPP Engineering Services, LLC, and Northwest Rotorcraft, LLC. This service information contains preventative daily maintenance instructions to be accomplished prior to the first flight of the day to inspect for loose or missing rivets, the tail boom attachment bolts for security, and tail boom attachment fittings and longerons up to 12 inches from the fittings for cracks.

- JJASPP Engineering Services Instructions for Continued Airworthiness for Restricted Category UH-1H Rotorcraft Report No. JJASPP-ICA-12-005, Revision IR, approved February 6, 2013, available from JJASPP Engineering Services, LLC. This report contains a Component Overhaul Schedule, an Airworthiness Limitation Schedule, and a Continued Airworthiness Documents section that list documents and reports required for servicing, maintaining, inspecting, repairing, and overhauling the rotorcraft, its engine, rotors, and appliances.

- Northwest Rotorcraft, LLC, UH-1H Instructions for Continued Airworthiness Report No. PH-106, Revision 7, approved March 15, 2012, available from Northwest Rotorcraft, LLC. This report contains a Component Overhaul Schedule, an Airworthiness Limitation Schedule, and a Continued Airworthiness Documents Section, which lists Army Technical Manuals required for servicing, maintaining, inspecting, repairing, and

overhauling the helicopter, its engine, rotors, and appliances, and for special purpose modifications.

- Rotorcraft Development Corporation Instructions for Continued Airworthiness Report No. GH-H3NM-CA1, UH-1B Helicopters, Revision 1, dated December 6, 2012, available from Rotorcraft Development Corporation. This report contains a Component Overhaul Schedule, an Airworthiness Limitation Schedule, and a Continued Airworthiness Documents Section that lists Army Technical Manuals required for servicing, maintaining, inspecting, repairing, and overhauling the helicopter, its engine, rotors, and appliances, and for special purpose modifications.

- Tamarack Helicopters, Inc., Instructions for Continued Airworthiness Report No. ICA-1, UH-1F, UH-1P AND TH-1F Helicopters, Revision 6, dated March 14, 2016, available from Tamarack Helicopters, Inc. This report contains a Component Overhaul Schedule, an Airworthiness Limitation Schedule, and a list of Air Force Technical Orders required for servicing, maintaining, inspecting, repairing, and overhauling the helicopter, its engine, rotors, and appliances.

- Tamarack Helicopters, Inc., UH-1H Instructions for Continued Airworthiness Report No. TAM-102, Revision Original, dated July 23, 2009, available from Tamarack Helicopter, Inc. This report contains a Component Overhaul Schedule, an Airworthiness Limitations Schedule and a Continued Airworthiness Documents section, which lists documents and reports required for servicing, maintaining, inspecting, repairing, and overhauling the helicopter, its engine, rotors, appliances and special purpose modifications.

- U.S. Army Aviation and Missile Command Depot Maintenance Work Requirement DMWR 55-1560-222, All H-1Series Tailboom Structural Assemblies, Change 6, dated June 18, 2002, available from JJASPP Engineering Services, LLC. This service information contains descriptions of the tail boom structure and guidance explaining tail boom attachment fitting structural loads; tail boom differences between helicopter models; required depot level modifications; tail boom structure isometric figures identifying the structural components; instructions to inspect the tail boom longerons for dents, cracks, holes, tears, corrosion, and distortion; longeron repair limits and repair instructions; instructions to inspect attachment fittings for cracks and hole elongation; attachment fitting repair limits and repair instructions; tail boom attachment fitting deburr before bonding to longeron instructions; and a requirement to dye penetrant the tail boom attachment fittings.

- U.S. Army Aviation and Troop Command Aircraft Depot Maintenance Work Requirement DMWR 55-1520-210, UH-1H/UH-1V Helicopters, Change 11, dated August 31, 1994, available from Northwest Rotorcraft, LLC, and Southwest Florida Aviation International, Inc. This higher-level document directs maintenance personnel to DMWR 55-1560-222 for detail depot maintenance instructions. It also contains information regarding differences between the two models, instructions for cleaning and corrosion control, longeron and stringer allowable damage and repair; requirements to check tail boom for alignment; general aircraft repair procedures; guidance explaining tail boom attachment fitting structural loads; and guidance regarding primary vs. secondary tail boom structure.



## **FAA's Determination**

The FAA is proposing this AD because the FAA evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of these same type designs.

## **Proposed AD Requirements**

This proposed AD would require revising the RFM for your helicopter to add before each flight and before first flight of the day pre-flight checks; removing excess paint and sealant from, and cleaning certain tail boom attachment structures; repetitive inspections for scratches, nicks, gouges, tears, corrosion, cracks, bond separation, loose, missing, and smoking rivets, buckling, distortion, number of attachment bolt exposed threads, and attachment bolt movement.

This proposed AD would require repairing scratches, nicks, gouges, tears, and corrosion within allowable limits. This proposed AD would require removing from service components with scratches, nicks, gouges, tears, and corrosion that exceed allowable limits, removing from service components with any cracks, buckling, or distortion, and removing from service loose, missing, or smoking rivets. This proposed AD would also require re-bonding any structure with dis-bonds, and removing loose bolts and self-locking nuts from service, and replacing them with new bolts and new self-locking nuts.

## **Differences Between this Proposed AD, the SAIB, and the Service Information**

This proposed AD differs from SAIB SW-18-29R1 by expanding the applicability to add various model helicopters operating under experimental airworthiness certificates due to design similarity. This proposed AD also updates part name nomenclature from

SAIB SW-18-29R1 by using “attachment bolt” and “attachment fitting” instead of “attach bolt” and “attach fitting.”

This proposed AD would require daily checks be performed with a flashlight and 25 hour and 100 hour TIS inspections be performed with a bright light and borescope. The service information does not specify any items to assist with the required checks or inspections. The proposed AD would require pushing on the tail boom while making certain inspections. The service information does not. On the fuselage side, this proposed AD would require paying particular attention to the attachment fitting section near the rivets closest to the attachment bolt, and the cap angle rivets next to the fitting. On the tail boom side, this proposed AD would require paying particular attention to the attachment fitting section near the rivets closest to the attachment bolt. The service information does not single out these sections. This proposed AD would require replacing any cracked components, while the service information allows stop drilling of certain cracks. This proposed AD would require removing any loose attachment bolts and their self-locking nuts from service and replacing them with new bolts and new self-locking nuts. The service information does not require replacement of any loose attachment bolts.

### **Costs of Compliance**

The FAA estimates that this proposed AD would affect 504 helicopters of U.S. registry. Labor costs are estimated at \$85 per work-hour. Based on these numbers, the FAA estimates the following costs to comply with this proposed AD.

Revising the RFM for your helicopter would take about 0.5 work-hour, for an estimated cost of \$43 per helicopter and \$21,672 for the U.S. fleet. The pre-flight check before each flight would take about 0.25 work-hour, for an estimated cost of \$21 per

helicopter per check and \$10,584 for the U.S. fleet per check. The pre-flight check before first flight of the day would take about 0.5 work-hour, for an estimated cost of \$43 per helicopter per check and \$21,672 for the U.S. fleet per check.

Removing excess paint and sealant, and cleaning all eight tail boom attachment fittings would take about 5 work-hours and a nominal materials cost, for an estimated cost of \$425 per helicopter per instance and \$214,200 for the U.S. fleet per instance.

Inspecting all four tail boom attachments for scratches, nicks, gouges, tears, corrosion, cracks, bond separation, loose, missing or smoking rivets, buckling, distortion, attachment bolt exposed thread, and attachment bolt movement would take about 4 work-hours, for an estimated cost of \$340 per helicopter per inspection and \$171,360 for the U.S. fleet per inspection.

Inspecting only the upper left hand tail boom attachment for scratches, nicks, gouges, tears, corrosion, cracks, bond separation, loose, missing or smoking rivets, buckling, distortion, attachment bolt exposed threads, and attachment bolt movement would take about 0.5 work-hour, for an estimated cost of \$43 per helicopter per inspection.

The FAA cannot estimate the costs to do any allowable repair based on the results of the inspections and the FAA has no way of determining the number of aircraft that might need repair.

The FAA estimates the following costs to do any necessary replacements based on the results of the inspections. The FAA has no way of determining the number of aircraft that might need these replacements.

- Replacing a tail boom attachment fitting would take about 33 work-hours and parts would cost about \$1,500 for an estimated cost of \$4,305.
- Replacing a tail boom longeron bond assembly (attachment fitting, longeron, and doubler) would take about 42 work-hours and parts would cost about \$7,000 (rebuilt) or \$21,270 (new) for an estimated cost of \$10,570 (rebuilt) or \$24,840 (new parts).
- Replacing a fuselage attachment fitting would take about 45 work-hours and parts would cost about \$1,838 for an estimated cost of \$5,663.
- Replacing a fuselage cap angle would take about 42 work-hours and parts would cost about \$1,827 for an estimated cost of \$5,397.
- Replacing an attachment bolt and self-locking nut would take about 1 work-hour and parts would cost about \$313 for an estimated cost of \$398.

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs describes in more detail the scope of the Agency's authority.

The FAA is proposing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

## **Regulatory Findings**

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

**Various Experimental and Restricted Category Helicopters:** Docket No. FAA-2019-0759; Product Identifier 2018-SW-075-AD.

**(a) Comments Due Date**

The FAA must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to the following helicopters, certificated in any category, including experimental and restricted:

- (1) Model EH-1H, EH-1X, HH-1H, HH-1N, UH-1D, UH-1M, UH-1N, and UH-1V helicopters;
- (2) Rotorcraft Development Corporation Model HH-1K helicopters;
- (3) Robinson Air Crane, Inc.; Rotorcraft Development Corporation; and Tamarack Helicopters, Inc., Model TH-1F helicopters;
- (4) Bell Helicopter Textron, Inc.; JTBAM, Inc.; and Rotorcraft Development Corporation, Model TH-1L helicopters;
- (5) Richards Heavylift Helo, Inc., Model UH-1A helicopters;
- (6) International Helicopters, Inc.; JTBAM, Inc.; Red Tail Flying Services, LLC; Richards Heavylift Helo, Inc.; Rotorcraft Development Corporation; San Joaquin Helicopters; and Southwest Florida Aviation International, Inc., Model UH-1B helicopters without Supplemental Type Certificate (STC) No. SR00026DE installed;

(7) Bell Helicopter Textron, Inc.; West Coast Fabrications; JTBAM, Inc.; Rotorcraft Development Corporation; and Smith Helicopters, Model UH-1E helicopters;

(8) AST, Inc.; California Department of Forestry; Robinson Air Crane, Inc.; Rotorcraft Development Corporation; and Tamarack Helicopters, Inc., Model UH-1F helicopters;

(9) Arrow Falcon Exporters Inc.; Global Helicopter Technology, Inc.; Hagglund Helicopters, LLC; JJASPP Engineering Services, LLC; JTBAM, Inc.; Northwest Rotorcraft, LLC; Richards Heavylift Helo, Inc.; Rotorcraft Development Corporation; Southwest Florida Aviation International, Inc.; and Tamarack Helicopters, Inc., Model UH-1H helicopters;

(10) Bell Helicopter Textron, Inc.; JTBAM, Inc.; and Rotorcraft Development Corporation, Model UH-1L helicopters; and

(11) Robinson Air Crane, Inc.; and Rotorcraft Development Corporation, Model UH-1P helicopters.

**(d) Subject**

Joint Aircraft System Component (JASC): 5302, Rotorcraft Tail Boom.

**(e) Unsafe Condition**

This AD was prompted by multiple accidents and incidents involving failure of the tail boom attachment structure and bolts. The FAA is issuing this AD to address fatigue cracking of tail boom attachment fittings, cap angles, longerons, and bolts. The unsafe condition, if not addressed, could result in separation of the tail boom from the helicopter and subsequent loss of control of the helicopter.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

(1) Before further flight, revise the limitations section of the Rotorcraft Flight Manual (RFM) for your helicopter by adding the information in Figure 1 to paragraph (g)(1) of this AD or by inserting a copy of this AD. This action may be done by the owner/operator (pilot) holding at least a private pilot certificate and must be entered into the aircraft records showing compliance with this AD by following 14 CFR 43.9 (a)(1) through (4) and 14 CFR 91.417(a)(2)(v). The record must be maintained as required by 14 CFR 91.417, 121.380, or 135.439.



### PRE-FLIGHT TAIL BOOM ATTACHMENT CHECK

(1) Before each flight, use two hands to push on the tail boom at the third vertical rivet line aft of the trailing edge of the elevator to check for looseness of the tail boom. Gradually apply and relieve pressure using body weight a minimum of three times in each of the following directions: inboard pushing from the left; inboard pushing from the right; and upward pushing from the bottom. If there is any looseness, further flight is prohibited until looseness is repaired and the helicopter is approved for return to service.

Note to paragraph (1) of this check: This check is not required for helicopters with 39-inch extended landing gear installed per STC SR01742NY.

(2) Before the first flight of each day: with the oil cooler/baggage compartment door on the right hand side of the helicopter open to gain access to the interior of the tail boom, and with an additional person applying and relieving pressure as detailed in paragraph (1) and using a flashlight, first, check for upper left hand attachment bolt movement by observing the torque stripe if present and attempting to rotate the bolt by hand, and second, check the upper left hand tail boom attachment structure for any loose and missing rivets, and any cracks in the following areas: on the fuselage side, check the fitting and the cap angle running forward from the fitting for any cracks, paying particular attention to the fitting section near the rivets closest to the attachment bolt and the cap angle rivets next to the fitting; and on the tail boom side, check the fitting and the longeron running aft from the fitting for any cracks, paying particular attention to the fitting section near the rivets closest to the attachment bolt. If the attachment bolt torque stripe is no longer aligned or the bolt rotates by hand, further flight is prohibited until the attachment bolt and self-locking nut are removed from service, replaced with a new bolt and new self-locking nut, and the helicopter is approved for return to service. If there are any loose or missing rivets, or cracks, further flight is prohibited until loose and missing rivets, and cracked components are removed from service and the helicopter is approved for return to service.

Note to paragraph (2) of this check: It is not required to push on the tail boom on helicopters with 39-inch extended landing gear installed per STC SR01742NY while checking for attachment bolt movement, loose and missing rivets and cracks.

Figure 1 to Paragraph (g)(1)

(2) Within 25 hours time in service (TIS):

(i) Open the oil cooler/baggage compartment door on the right hand side of the helicopter to gain access to the interior of the tail boom.

(ii) Remove paint and stray sealant and clean the eight attachment fittings (four on the tail boom side and four on the fuselage side). Remove paint and stray sealant and clean the four cap angles, forward of the fuselage fittings, for at least 12 inches from the end of the fittings. Remove paint and stray sealant and clean the four longerons, aft of the tail boom fittings, for at least 12 inches from the end of the fittings. It is only necessary to remove the topcoat. Primer may be left in place and edge and fillet sealant may be left in place. If any primer or edge or fillet sealant is removed, before further flight, reapply the removed primer and sealant.

Note 1 to paragraph (g)(2)(ii) of this AD: On some models, the baggage compartment floor and net must be removed to gain access to the lower fuselage attachment fittings and cap angles.

(iii) With an additional person pushing on the tail boom at the third vertical rivet line aft of the trailing edge of the elevator with both hands and gradually applying and relieving pressure using body weight a minimum of three times in each of the following directions: inboard pushing from the left; inboard pushing from the right; and upward pushing from the bottom; and using a bright light and borescope, inspect each of the four tail boom attachment structures for cracks, bond separation, and loose rivets. On the fuselage side, inspect the fittings and the cap angles running forward from the fittings, paying particular attention to the fitting sections near the rivets closest to the attachment bolts and the cap angle rivets next to the fittings. On the tail boom side, inspect the

fittings and the longerons running aft from the fittings, paying particular attention to the fitting sections near the rivets closest to the attachment bolts. Without pushing on the tail boom, and using a bright light and borescope, inspect each of the four tail boom attachment structures for scratches, nicks, gouges, tears, corrosion, buckling, and distortion, and for loose, missing, and smoking rivets. If there are any scratches, nicks, gouges, tears, or corrosion within allowable limits, before further flight, repair the affected components. If there are any scratches, nicks, gouges, tears, or corrosion that exceed allowable limits, or any cracks, buckling or distortion, or loose, missing, or smoking rivets, before further flight, remove the affected components from service. If there is any bond separation, before further flight, re-bond the affected components.

Note 2 to paragraph (g)(2)(iii) of this AD: It is not required to push on the tail boom on helicopters with 39-inch extended landing gear installed per STC SR01742NY while checking for cracks, bond separation, and loose rivets.

(iv) Inspect each of the four tail boom attachment bolts for exposed threads. If there is less than one full thread or more than three threads exposed, before further flight, remove the bolt and self-locking nut from service and replace with a new bolt and new self-locking nut.

(v) Inspect each of the four tail boom attachment bolts for movement by either applying the required installation torque in the tightening direction only, or by inspecting for torque stripe misalignment if present and attempting to rotate the bolt by hand. If a bolt is under-torqued, a torque stripe is misaligned, or a bolt moves, before further flight, remove the bolt and self-locking nut from service and replace with a new bolt and new self-locking nut.

(vi) After the first flight following any bolt replacement as required by paragraph (g)(iv) or (v) of this AD, retighten any replaced bolt by applying torque in the tightening direction only and then apply a torque stripe on the bolt head.

(3) At intervals not to exceed 25 hours TIS, perform the actions required by paragraph (g)(2)(i) through (vi) of this AD, except you are only required to perform the actions on the upper left hand tail boom attachment structure and bolt.

(4) At intervals not to exceed 100 hours TIS, perform the actions required by paragraph (g)(2)(i) through (vi) of this AD at all four tail boom attachment locations.

**(h) Special Flight Permit**

Special flight permits are prohibited.

**(i) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Denver ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send your proposal to: Richard R. Thomas, Aerospace Engineer, Denver ACO Branch, Compliance & Airworthiness Division, FAA, 26805 East 68th Ave., Room 214, Denver, CO 80249; phone: (303) 342-1085; fax: (303) 342-1088; email: richard.r.thomas@faa.gov and 9-Denver-Aircraft-Cert@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(j) Related Information**

For more information about this AD, contact Richard R. Thomas, Aerospace Engineer, Denver ACO Branch, Compliance & Airworthiness Division, FAA, 26805 East 68th Ave., Room 214, Denver, CO 80249; phone: (303) 342-1085; fax: (303) 342-1088; email: richard.r.thomas@faa.gov.

Issued in Fort Worth, Texas, on October 23, 2019.

Lance T. Gant,

Director, Compliance & Airworthiness Division,  
Aircraft Certification Service.

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